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Summary of the Food Fishery for Cod in NAFO Divisions 2J, 3K, 3L and 3Ps in 1996 with comparison to 1994

by

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Abstract

The food fishery (previously referred to as recreational handlining) was permitted in 1996 in NAFO Divs. 2J, 3K, 3L, 3P and 4R along the coast of Newfoundland and Labrador. The fishery was opened for two consecutive three-day weekends, Sept. 20 to Sept. 22 and Sept. 27 to Sept. 29, compared to five weekends in 1994 and an unrestricted fishery in 1993. No fishery was permitted in 1995. Landings estimated from observations by fishery officers suggest a catch in the range of 1,250t compared to 1,550 t for 1994. Catch rates were similar for the two weekly periods being progressively higher to the north (except in NAFO Div. 2J) and west from about 1 to 4 fish per hook per hour on the Southern Shore to 5-7 fish in White Bay. Along the south and west coasts of the island, the catch rates were similar at about 2 fish per hook per hour except in St. Mary's Bay where the catch rate was less than 1 fish per hook per hour. Size of fish was found to be similar within bays for both weeks. However, there were differences in average size of fish among bays. Fish size in NAFO Div. 3K was similar among bays averaging 55 cm. Sizes were more variable in 3L. The largest fish from 3L were taken in St. Mary's Bay ranging from 38 to 90 cm and averaging 59 cm, and Trinity and Bonavista Bay where the fish ranged from 32 to 94 cm, averaging 58 cm. Fish taken from 3Ps were similar in size to those in 3KL, averaging 56 cm. and ranging from 31 to 116 cm. The fish from the west and southwest coast (4R and 3Pn) averaged 56 cm and ranged from 34 to 90 cm (no data from 1994). Fish from White Bay to Conception Bay were considerably larger than in 1994 (average +8 to 13 cm). For the Southern Shore (3L) and the south coast (3Ps), they were more similar in size between years (+1 to 5 cm larger on average). However, comparing size of fish in the catches from the 1994 and 1996 may be affected by the different gear used. In 1994, both jiggers as well as baited hooks and lures were used while in 1996, effort was restricted to lures and baited and feather hooks.

Résumé

On a autorisé en 1996 la pêche pour la consommation humaine (qu'on appelait auparavant la pêche récréative à la ligne à main) dans les divisions de l'OPANO 2J, 3K, 3L, 3P et 4R le long de la côte de Terre-Neuve et du Labrador. La pêche a été ouverte pendant deux fins de semaines consécutives de trois jours chacune, c'est-à-dire du 20 au 22 septembre et du 27 au 29 septembre, comparativement à cinq fins de semaine en 1994. Il n'y a eu aucune restriction de la pêche en 1993. Aucune pêche n'a été autorisée en 1995. D'après les observations faites par les agents des pêches dans le cadre des débarquements, il semblerait que les prises aient été d'environ 1 250 t comparativement à 1 550 t en 1994. Les taux de capture ont été semblables pendant ces deux périodes de trois jours. Plus on allait vers le nord (sauf dans la division 2J de l'OPANO) et l'ouest, plus les taux de capture augmentaient progressivement, variant d'environ 1 à 4 poissons par hameçon à l'heure sur le littoral sud à 5 à 7 poissons à White Bay. Le long des côtes sud et ouest de l'île, les taux de capture ont été semblables, c'est-à-dire environ 2 poissons par hameçon à l'heure, sauf dans la baie Sainte-Marie où le taux de capture a été de moins d'un poisson par hameçon à l'heure. Les poissons capturés étaient de taille semblable d'une baie à une autre pendant les deux semaines. Cependant, la taille moyenne du poisson variait d'une baie à une autre. La taille du poisson pris la division 3K de l'OPANO était semblable d'une baie à une autre, c'est-à-dire en moyenne de 55 cm. Les variations de la taille étaient plus marquées dans la division 3L. Dans la division 3L, les poisson les plus gros ont été capturés dans la baie Sainte-Marie. Leur taille variait de 38 à 90 cm. Elle était en moyenne de 59 cm. Dans la baie de la Trinité et la baie de Bonavista, la taille du poisson variait de 32 à 94 cm. Elle était en moyenne de 58 cm. La taille des poissons pris dans la division 3Ps était semblable à celle des poissons capturés en 3KL, soit de 31 à 116 cm, pour une moyenne de 56 cm. La taille du poisson pêché sur la côte ouest et la côte sud-ouest (4R et 3Pn) était en moyenne de 56 cm. Elle variait de 34 à 90 cm (aucune donnée disponible pour 1994). Le poisson pris de White Bay à la baie de la Conception était beaucoup plus gros qu'en 1994 (en moyenne de 8 à 13 cm plus long). Sur le littoral sud (3L) et sur la côte sud (3Ps), la taille était plus semblable d'une année à l'autre (en moyenne de 1 à 5 cm plus longue). Toutefois, il faut se rappeler lorsqu'on compare la taille du poisson pris en 1994 à celle du poisson capturé en 1996 que les types d'engins de pêche utilisés peuvent faire une différence. En 1994, on a utilisé des turluttes de même que des hameçons appâtés et des leurres tandis qu'en 1996, l'effort de pêche a été restreint à des leurres ainsi qu'à des hameçons appâtés et des hameçons à plume.

Introduction

Since the moratorium imposed on the cod fishery in NAFO Div.'s 2J, 3K, 3L in 1992 and 3Ps in 1993, limited effort has been directed for cod in the form of food fisheries (Kulka *et al* 1995). Recreational handlining (later referred to as the food fishery) took place in 1993 without seasonal restriction. In 1994, based partly on the poor results of the previous season, and to prevent large amounts of fish being taken (as was thought to be the case in 1993), the fishing was limited to five Friday/Saturday periods in August and September. Fishers were allowed a maximum of 10 fish per day. The fishery was closed a week early after Sept. 17 apparently based on the small size and low numbers of fish in the catches. Estimates of catches compiled by the Statistics Branch of Fisheries & Oceans amounted to about 9,000t for 1993 and 1,550t for 1994.

In 1996, the Minister again opened a limited food fishery for the Province of Newfoundland and Labrador for two consecutive three day weekends, Sept. 20 to Sept. 22 and Sept. 27 to Sept. 29. A boat limit of 10 fish per day per individual to a maximum of 50 fish per boat was imposed to limit the catch. Unlike 1993 and 1994, all effort was restricted to baited or feather hooks and lures. Jiggers were prohibited.

A requirement of Department of Fisheries & Oceans was that the fishery be closely monitored. As a result, Science Branch in conjunction with Fisheries Management gathered catch, effort, length and age information from all of the areas fished. This paper summarizes the findings of the sampling program that covered the 1996 food fishery on the Atlantic side of Newfoundland (Labrador to Fortune Bay) and compares these findings to the 1994 fishery. Catch rates and fish sizes by area are presented.

Methods

Determination of landing locations was made by visiting communities and speaking to local people to find where the greatest concentrations of landings were likely to be. Areas where fish landings were highest in the 1994 fishery were targeted for sampling.

Six port samplers were teamed with 23 fishery observers to monitor 11 bays at about 75 locations on the Labrador coast, the Northern Peninsula, White Bay, Green Bay, Bonavista Bay, Notre Dame Bay, Trinity Bay, Conception Bay, Southern Shore south of St. Johns , Placentia Bay, Fortune Bay and Hermitage Bay plus samples taken at sea (Fig.1).The aim was to obtain sufficient samples from as wide an area as possible to monitor size and age of fish in the catches. In most cases, measurements of total length were obtained from both morning and evening landings. The entire catch of each fisher was measured. Otoliths were collected from a subset of measured fish in each length group. Other biological information (maturities, fish girths and stomach contents) were gathered in limited amounts

Catch and effort data (number of cod caught, number of vessels, number of persons fishing per vessel, number of hours fished, number of lines and number of hooks) was taken with each sample. Catch rates were determined by dividing number of cod caught by each person by number of person-hours per vessel. An average catch rate of observed vessels was calculated for each bay. As well, other narrative information including opinions on the fishery and the stock status were recorded.

Table 1 - Food fishery sampling effort (number of fish measured) for 1996

Location	Sept. 20-22	Sept. 27-29	Total	Avg. Len(cm)
2J				
St. Lewis, Marys Hbr	171	761	932	45
3K				
White Bay	1,965	1,015	2,980	55
Notre Dame Bay	889	1,434	2,323	55
Sum	**3,025**	**3,210**	**6,235**	**55** (avg)
3L				
Bonavista Bay	1,564	1,594	3,158	58
Trinity Bay	1,099	739	1,838	58
Conception Bay	1,341	1,877	3,075	56
Southern Shore	1,060	400	1,460	54
St. Mary's Bay	524	378	902	59
Sum	**5,588**	**4,988**	**10,107**	**57** (avg)
3Ps				
Placentia Bay	700	475	1,175	55
Fortune Bay	2,628	2,345	4,973	57
Sum	**3,328**	**2,820**	**6,109**	**56** (avg)
4R3Pn	245	479	724	**56**
Total	**12,186**	**11,018**	**23,204**	

Table 1, above summarizes the sampling effort for 1996 by weekend and bay. A total of 23,204 fish were measured with some effort from all of the bays plus Labrador and the west coast of Newfoundland.

Results

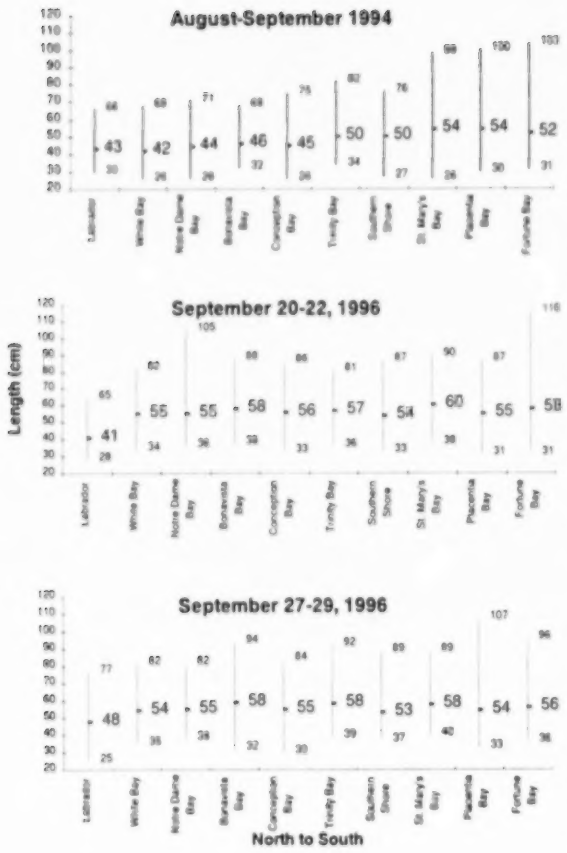

Fig.2 - Average size and range of cod by bay.

Fishers in most areas reported catching larger fish than in 1994 and the data in most areas supported this perception. Also, the average size and shapes of the length frequencies were consistent between weekends in 1996 and data were combined.

Fig. 2 summarizes range (bars) and mean size of fish by bay for 1994 (upper panel) and 1996 (middle and lower panel). Fish taken in 1996 from White Bay to Conception Bay were considerably larger than in 1994 (average +8 to 13 cm). For the Southern Shore (3L) and the south coast (3Ps), they were more similar in size between years (+1 to 5 cm larger on average).

The north to south increase in average size observed in the 1994 fishery was not apparent in 1996. Fish size in NAFO Div. 3K was similar among bays (White Bay and Notre Dame Bay) averaging 55 cm. In 1996. By contrast, average size was 43 cm in 1994. Sizes were more variable in NAFO Div. 3L. The largest fish from 3L were taken in St. Marys Bay ranging from 38 to 90 cm and averaging 59 cm, and Trinity and Bonavista Bay where the fish ranged from 32 to 94 cm, averaging 58 cm. Fish taken from 3Ps were similar in size to those in 3KL, averaging 56 cm. and ranging from 31 to 116 cm. The fish from the west and southwest coast (4R and 3Pn) averaged 56 cm and ranged from 34 to 90 cm (no data from 1994).

However, comparing size of fish in the catches from the 1994 and 1996 may be affected by the different gear used. In 1994, both jiggers as well as baited hooks and lures were used while in 1996, effort was restricted to lures and baited and feather hooks. This change may have resulted in different selectivity between years. Also, aging is required to determine if it is the same year classes being caught in 1994 and 1996. A wider range of sizes in some areas suggests more year

classes being taken. There was some indication of release of small fish (most fishers indicated no discarding, others about 1 fish in 10). More small fish may have been caught than is evident from the data collected.

General patterns of catch rates (number of fish caught per hook per hour with 95% confidence intervals) varied among bays as shown in the adjacent Fig. 3 Catch rates, Labrador aside, generally declined southward. Between weeks, the pattern was similar although catch rates during the first week were somewhat higher from Notre Dame Bay to the Southern Shore, perhaps in part due to the poorer weather during the second week. During both time periods, most fishers indicated their satisfaction with the rate of catch. In 1996, most areas exceeded the catch rate of about 1.5 to 2.5 observed in 1994. The 4 to 7 fish per hook per hour catch experienced along the north-east coast (Conception to White Bay) and the Southern Shore in 1996 represents a substantial increase over 1994 rates. However, some of the older commercial fishers interviewed still considered these 1996 rates to be low compared to historic values. The catch rates in NAFO Div. 3Ps were similar between 1994 and 1996.

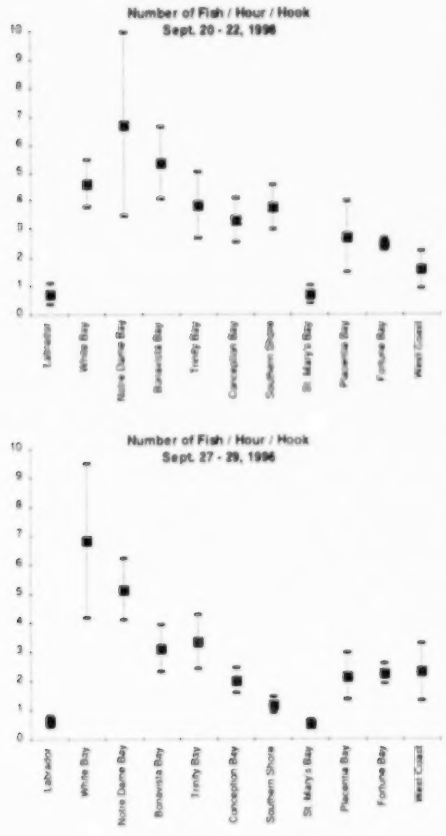

Fig 3 – Average catch rate by bay.

The very low catch rate in St. Marys Bay is due mainly to the use of more hooks per line (average of 5) than other areas (average less than 2). Fishers tended to pull in the line after one fish regardless of number of hooks per line. However, as for size of fish caught, the change in gear used between years could affect the catch rate. As well, catch rates may simply be a measure of local densities along the coast and may not reflect changes in overall abundance. Sentinel fishers in the past suggested that high catch rates should be treated with caution.

Maturities from Southern Shore and Placentia Bay samples showed that about 70% of the males and 43% of females in the catch were adult (had spawned in the past). All of these fish were either spent or were in early maturing stages for next year indicating that the fishery took place after spawning was complete. Limited observations of stomach content showed that small snow crabs were the most common food item in several areas. Other invertebrates such as amphipods and brittle stars, as well as fish were also observed.

Conclusions

As opposed to 1994, most participants in the fishery considered the food fishery to be a success. In most areas, fishers usually experienced no problem in reaching the 10 fish daily limit and this is reflected in the catch rates results. Poor weather in the second week may have affected catch rates in some bays. Anecdotal information on catch rates and fish size generally matched with the results of this study. Perhaps the most significant change between 1994 and 1996 were the higher catch rates experienced and larger fish caught along the north-east coast. Similar increases did not occur along the south coast. This increase in catch rate suggests that local densities of cod schools in these areas increased in 1996. How this reflects on abundance of the cod is uncertain since there were differences in the gear used between years. Also, catch rate is a measure of local density but not necessarily of abundance. However, gear cannot explain all of the observed increase in catch rates along the north-east coast since similar gears were used along the south coast were catch rates did not change significantly. It would appear that local density did increase in NAFO Divs. 3K and 3L although this did not necessarily reflect an increase in abundance inshore.

Opinion commonly offered by bona fide fishers was that the fishery should not have been reopened in 1994 based on the previous year's fishery or that the fishery had been opened too early. These sentiments were usually not encountered in 1996.

References

Kulka, D. W., R. Stead, D. Lane, and L. Russell 1995. Summary of the Food Fishery for Cod in NAFO Divisions 2J, 3K, 3L and 3Ps in 1993 and 1994. DFO Atl. Fish. Res. Doc. 95/47 20p

Figure 1 - Sampling sites for the 1996 food fishery